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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,023	08/22/2003	Baojun Li	135841 (3786)	9246

7590 09/20/2004

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EXAMINER	
ARTMAN, THOMAS R	
ART UNIT	**PAPER NUMBER**
2882	

DATE MAILED: 09/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/646,023	LI ET AL.	
	Examiner	Art Unit	
	Thomas R Artman	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-15 and 17-26* is/are rejected.

7)☒ Claim(s) *3 and 6* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *22 August 2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claims 6 and 19 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Both claims recite the limitation where the detector is tilted such that it is aimed at the center position of the total sweep angle. This makes the individual sweep angles on either side of the detector centerline equal, and therefore the total sweep angle is symmetric. This is in direct conflict with parent claims 1 and 14, respectively, which specifically claim that the total sweep angle is asymmetric, where the individual sweep angles on either side of the detector centerline are different. Therefore, claims 6 and 19 do not further limit their parent claims 1 and 14 and are improper dependent claims under 37 CFR 1.75(c).

For the purposes of expediting prosecution, the examiner will assume that claims 6 and 19 allow the device to use symmetric total sweep angles.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Both claims recite the limitation of tilting the detector such that it is aimed at the center of the total sweep angle. This limitation is in direct conflict with parent claims 1 and 14, respectively. Claims 1 and 14 specifically define the total sweep angle as being asymmetric, where the individual sweep angles on either side of the centerline of the detector are different. The limitations of claims 6 and 19 would create a symmetric total sweep angle, where the individual sweep angles on either side of the centerline of the detector array become equal. This creates great ambiguity as to whether or not the total sweep angle is, or is not, asymmetric.

For the purposes of expediting prosecution, the examiner will assume that claims 6 and 19 allow the device to use symmetric total sweep angles.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4-15 and 17-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Fazzio (US 6,324,249).

Regarding claims 1 and 14, Fazzio discloses a tomosynthesis system and method of use (Figs.3a, 4, 14 and 15), including:

a) an x-ray detector 258, and

b) an x-ray source 200 that emits x-rays 284 at the detector, where

c) the system utilizes an asymmetric image acquisition geometry (col.33, line 46, to col.34, line 4) where the sweep angle (relative source path) is not centered over the detector, resulting in sweep angles on either side of the detector centerline that are not equal.

With respect to claims 2 and 15, the total sweep angle is the sum of the individual sweep angles.

With respect to claims 4, 5, 17 and 18, the detector is placed at a predetermined position based upon the desired region of the patient to be imaged, including limbs, thoracic region (sternum), etc.

With respect to claims 6 and 19, Fazzio further discloses symmetric sweep angles, where the relative source path is centered over the detector (col.33, line 46, to col.34, line 4).

With respect to claims 7 and 20, at least one of the x-ray source and the x-ray detector move during image acquisition (col.33, line 46, to col.34, line 4).

With respect to claims 8 and 21, the detector moves at least in a one-dimensional path (col.33, line 46, to col.34, line 4).

With respect to claims 9 and 22, the x-ray detector remains stationary during image acquisition (col.33, line 46, to col.34, line 4).

With respect to claims 10 and 23, the object being imaged moves while the source and detector remain stationary (col.33, line 46, to col.34, line 4).

With respect to claims 11 and 24, the x-ray source moves in a translational or rotational manner (col.33, line 46, to col.34, line 4).

With respect to claims 12 and 25, the x-ray scanning occurs horizontally.

With respect to claims 13 and 26, a reconstruction algorithm produces a reconstructed image of the object from the plurality of two-dimentional x-ray projections.

Allowable Subject Matter

Claims 3 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record neither teaches nor reasonably suggests a total asymmetric sweep angle in the range of 40° to about 60°.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Claus (US 6,751,284) teaches non-symmetric acquisition geometry relating to the symmetry of the relative source path in a plane parallel to the detector surface.

Trotter (US 6,633,626) and Webber (US 5,668,844) teach tomosynthesis systems that seem to appear to have asymmetric acquisition geometries, but the references are not clear.

Curth (US 4,416,018) and Ashe (US 3,746,872) teach tomosynthesis systems that appear to have symmetric acquisition geometries, but the references are silent.

Harding (US 5,473,653) teaches a tomosynthesis system that has symmetric acquisition geometries.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas R Artman whose telephone number is (571) 272-2485. The examiner can normally be reached on 9am - 6:30pm Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thomas R. Artman
Patent Examiner

Craig E. Church
Primary Examiner